CLAIMS

1. A method of processing organic waste (D) in divided solid and/or liquid form, the method being implemented in a single reactor (1) containing a bath of molten glass (V) surmounted by a gas phase (G), the method comprising incinerating said waste (D) in the presence of oxygen at the surface (S) of said bath of molten glass (V), and in vitrifying said incinerated waste (D) in said bath of molten glass (V), the method being characterized in that in addition to the oxygen or the oxygen-containing gas delivered as oxidizer into said gas phase (G), oxygen or oxygen-containing gas is also injected into said bath of molten glass (V) in a quantity that is sufficient to minimize or to avoid any formation of metal within said bath of glass (V); advantageously in a quantity that is sufficient to minimize or to avoid any formation of metal within said bath of glass (V) and also to subject said bath of glass (V) to moderate stirring; the means (8) used for said injection being cooled and arranged in such a manner that on ceasing said injection, they do not constitute a plug of glass at their open end.

2. The method according to claim 1, characterized in that said oxygen or oxygen-containing gas injected into said bath of glass (V) is introduced into said reactor (1) beneath the surface (S) of said bath of glass (V).

3. The method according to claim 1 or claim 2, characterized in that it is implemented with cooling of the walls (3, 3') of said reactor (1) and/or of the means (5, 6), other than said means (8) for injecting oxygen or oxygen-containing gas into said bath of glass (V), introduced into said reactor (1) in said gas phase (G) and in said bath of glass (V), in particular for feeding said reactor (1) with said waste (D) and with oxidizer.

4. The method according to claim 3, characterized in that it is implemented with dual cooling of the device (5) for feeding said waste (D) to said reactor (1):

first cooling of its thickness and of its outside surface (50), designed to protect it from corrosion; and

second cooling of its inside surface (50'), designed to minimize the heat transferred to the incoming waste (D).

5. The method according to claim 3 or claim 4, characterized in that said walls (3, 3') of said reactor (1) in contact with said gas phase (G) and/or said means (5, 6) introduced into said reactor (1) in contact with said gas phase (G) are cooled by

circulation of at least one cooling fluid maintained at a temperature that is higher than the dew point of said gas phase (G).

6. The method according to any one of claims 1 to 5, characterized in that said bath of glass (V) is heated by induction, by flame, by plasma torch, or by means of electrodes dipped therein.

7. The method according to any one of claims 1 to 6, characterized in that it is implemented in a cold crucible heated by induction.

8. The method according to any one of claims 1 to 7, characterized in that it is implemented to process radioactive waste.

9. An apparatus for processing organic waste (D) in divided solid and/or liquid form by incineration and by vitrification, the apparatus comprising a reactor (1) associated with heater means (2) suitable for maintaining a bath of molten glass (V) in the bottom of said reactor (1), and fitted with:

- means (4) for emptying out said bath of molten glass (V);
- a device (5) for feeding said waste (D) to be incinerated and vitrified, said device (5) opening out above the surface (S) of said bath of molten glass (V);
- means (6) for feeding oxygen or oxygen-containing gas, delivering said oxygen or said gas above the surface (S) of said bath of molten glass (V); and
- at least one combustion gas outlet (7) provided in the top portion of said reactor (1) well above the surface (S) of said bath of molten glass (V);

the apparatus being characterized in that said reactor (1) is further equipped with means (8) for injecting oxygen or oxygen-containing gas into said bath of molten glass (V); said means (8) for injecting said oxygen or said gas into said bath of molten glass (V):

being arranged in such a manner that on ceasing to be fed, they do not constitute a plug of glass at their open end; and

including at least one circuit (83 + 83') for circulating a cooling fluid within their structure.

10. The apparatus according to claim 9, characterized in that said means (8) for injecting said oxygen or said gas into said bath of glass (V) are introduced into the bottom portion of said reactor (1) beneath the surface (S) of said bath of glass (V).

11. The apparatus according to claim 9 or claim 10, characterized in that said means (8) for injecting said oxygen or said gas into said bath of glass (V) are disposed vertically, passing through the bottom of said reactor (1) and presenting an outlet (82) at 90° to their vertical axis.

12. The apparatus according to any one of claims 9 to 11, characterized in that the means introduced into said reactor (1), other than said means (8) for injecting said oxygen or said gas into said bath of molten glass (V), including said device (5) for feeding said waste (D), said means (6) for feeding oxygen or oxygen-containing gas include at least one circuit (51, 52; 61) for circulating a cooling fluid within their structure.

13. The apparatus according to claim 12, characterized in that said device (5) for feeding said waste (D) presents a structure that is tubular, being defined by an outside surface (50) and by an inside surface (50'), said structure including in the thickness thereof at least two circuits (51 and 52) for circulating cooling fluids, at least one of said circuits (51) being designed to cool said structure and said outside surface (50) of said feeder device (5), and at least another one of said circuits (52) being designed to cool said inside surface (50') of said feeder device (5).

14. The apparatus according to any one of claims 9 to 13, characterized in that the walls (3, 3') of said reactor (1) are of the double-walled type, to allow a cooling fluid to circulate.

15. The apparatus according to any one of claims 9 to 14, characterized in that said reactor (1) is a cold crucible, and in that said heater means (2) are means for induction heating.

Sub B2

Add B3